



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office,  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,619	10/28/2002	Aeneas B Massara	2490-17	9169

23117 7590 12/05/2003

NIXON & VANDERHYE, PC  
1100 N GLEBE ROAD  
8TH FLOOR  
ARLINGTON, VA 22201-4714

EXAMINER

MENEFEY, JAMES A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/070,619

Applicant(s)

MASSARA ET AL.

Examiner

James A. Menefee

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

*Paul Ip*

PAUL IP

SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

Art Unit: 2828

## **DETAILED ACTION**

### ***Response to Amendment***

In response to the preliminary amendment filed 3/8/2002, the specification and claims 3, 4, 7-14, 17, 19, and 21 are amended. Claims 1-21 are pending.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "6" on p. 2 line 34 and p. 3 line 1. An amendment to the specification, a proposed drawing correction, or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lang (US 5,164,956) in view of Burt et al. (US 6,052,213).

Regarding claim 1, Lang discloses an optical device comprising a laser diode having a ridge waveguide located above an active layer and having a distributed reflector arranged on either side of the ridge. It is not disclosed that the reflector is a lattice of individual elements arranged in a two dimensional array. Burt teaches that a grating may be formed of a lattice of individual elements arranged in a two dimensional array. It would have been obvious to one skilled in the art to replace Lang's grating with a grating such as in Burt because it provides for a highly efficient grating, as taught by Burt.

Regarding claim 2, the distributed reflector comprises a structure in material above the active layer on either side of the ridge.

Regarding claims 3, 7-8, 11-13, and 15-16, the particular depth and location of the distributed reflector is not disclosed. However, it is well known to include in such a laser device a distributed reflector at the depths and locations as claimed, and it would have been obvious to one skilled in the art to do so as an obvious design consideration as these considerations will provide known changes in the output characteristics.

Regarding claims 4-6, Burt teaches the individual elements are holes. They may be arranged in a hexagonal or square array (Fig. 4a-b).

Regarding claims 9-10, the holes are regions of different refractive index and gain as that of the device structure.

Regarding claim 14, the distributed reflector is within the device.

Regarding claims 17-18, it is not disclosed that there are means for varying a bias to the device or that the wavelength can be tuned. It is well known in lasers having gratings that the bias voltage may be varied and the output tuned. It would have been obvious to one skilled in the art to do these things to provide efficient operation and to control the wavelength to meet a desired application, as is well known.

Regarding claims 19-21, these additional portions of the laser are not disclosed, but it is well known in the art to include any of these portions. It would have been obvious to one skilled in the art to include these portions to provide additional control over the output of the device as a matter of obvious engineering design choice.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fiddyment et al. (US 4,805,184) and Takahashi (US 5,960,023) disclose ridge waveguide lasers having a grating on the sides of the ridge. Lin et al. (US 2001/0012149), Koops (US 6,064,506), Joannopoulos et al. (US 5,955,749), and Kinoshita (US 5,247,536) disclose photonic crystal gratings similar to Burt and the present invention.

Art Unit: 2828

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367.

The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JM  
November 18, 2003



PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800